BAMSF 12.1 v.9
EVMSF 12.1 v.9
HNMSF 12.1 v.9

P4 Production, LLC

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July 11, 2007

Re: Response to Agency/Tribal Direction for Groundwater Characterization and Data Gap Analysis at P4 Production, LLC Enoch Valley, Henry and Ballard Mine Sites, Idaho.

Dear Mr. Rowe:

P4 Production, LLC (P4) and our consultant, MWH, Inc., appreciated the time and effort that the agency and tribal staff (the agencies) put into preparing and presenting the above referenced document. This document and subsequent discussion provided all parties involved a clearer understanding of the expectations and challenges associated with the groundwater investigation at the P4 mines.

We have prepared a detailed response to the above referenced data gap document to further summarize the discussion, and to reiterate P4's position and proposed resolutions. This summary benefits from the June 18-19, 2007 meeting in Soda Springs between P4, MWH, the agencies, as well as subsequent consideration of the issues. The agency and tribal statements and requests have been broken down into Items A through G for the statement of general expectations beginning with "Shallow Alluvial Aquifers". The remainder of the document dealing with mine specific data gaps was broken down into Items 1 through 37. A response and/or discussion have been added following each item in the table attached to this letter.

P4's general approach has been to look for potential "worst-case" type locations and investigate those locations to learn more about a specific type of flow pathway. That data would then be used to focus the next phase of investigation. Agency and tribal support for this approach was communicated both in the data gap memorandum and in the June meeting. However, it was also communicated that P4 needed to investigate all potential sources and every pathway at each of the mines. P4 now takes that to mean that actual physical investigation may not be required, but at least sufficient information needs to be presented to support the need or lack of need for actual physical and chemical investigation. It seems reasonable to meld this approach will P4's approach into the next iteration of the groundwater technical memorandum. However, in some cases, P4 will strive to collect additional data in 2007 to help address specific data gaps that have been indicated by the agencies.

The following is a brief synopsis of the outcome of the June meeting, and P4's subsequent evaluation of the data gap document and related discussion. This discussion generally presents P4's response to the data gaps identified and the progression of the groundwater investigation in general. However, for detailed responses and comments, the reader is directed to the attached table.

Shallow Alluvial Flowpath

The shallow alluvial flowpath is potentially the most relevant at the site. Seepage from the dumps is often focused toward the old alluvial-filled stream channels located beneath the dumps. Therefore, these channels could act to drain a portion of the dump seepage from beneath the mine waste areas. Potential receptors may be exposed where this water emerges as springs and discharges to surface water, is taken up by plants from the water table, or withdrawn as a water supply. P4 therefore feels that a focus on this pathway is appropriate as there is a potentially completed pathway through the alluvial systems to potential receptors.

P4 will install a select number of wells in 2007 to assess and validate this pathway, with follow-on phases, as appropriate. This includes evaluating the alluvial pathway directly down-gradient of impacted dump seeps to assess this relationship and transport along the alluvial flow pathway. The agencies proposed that a program was needed to identify and define the nature and extent in all potential alluvial pathways, and that the contributions of individual sources needs to be understood. A compromise approach discussed in the June meeting is to conduct a reconnaissance or screening level groundwater water sampling program to help delineate the potential alluvial impacts. A direct-push groundwater sampling technology is suggested for this program. The program will need to be tied to some fixed well locations, and this may require installation of Phase III wells in 2008. However, if needed, the direct-push program will ideally allow for efficient placement of a few select wells to complete the characterization. P4 believes the direct-push program could be conducted in the Fall of 2007, but needs to develop a work plan and budget.

In regard to characterizing every source, P4 is suggesting that similar types of sources present similar environmental impacts and will therefore require a similar remedial alternative. For example, if a waste dump at the Ballard Mine is contributing selenium to an alluvial aquifer, then all the similar dumps have similar potential and will require a similar remedial approach. Here again, this leads P4 to focus on the types of pathways that need to be addressed as opposed to characterizing every potential pathway and source.

Intermediate Dinwoody Formation Flowpath

P4 had not targeted the potential Dinwoody Formation flowpath in the Phase II investigation to be conducted in the summer of 2007, and P4 recognizes the agencies' concern regarding this flowpath. P4 is assessing the possibility of installing two wells into the Dinwoody Formation (Trd) as part of the 2007 drilling schedule.

Data from these wells will be used to further develop the Trd conceptual flow model, and assist in evaluating the need to further investigate this pathway at other locations. Conceptual models for other locations where Trd pathways may represent a potential flowpath of concern will be developed and this information will be presented to the agencies. Some locations may be eliminated from further investigation based on these models, whereas others may require direct investigation.

Generally, the Thaynes Formation (Trt) is not considered a potential flowpath, and this will be supported with conceptual models in a few key areas. However, the model will be influenced by the results of the investigation of the Trd. Highly, impacted Trd would call for reassessment of the Trt flowpath.

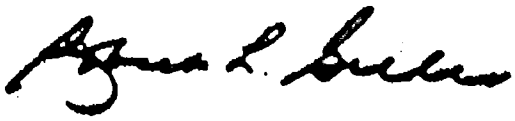
Deep Wells Formation Flowpath

Investigation of the deep regional Wells Formation flowpath is technically challenging and generally requires deep and expensive monitoring wells. Because of this, additional wells need to be very carefully thought through. The approach P4 will take on most of the indicated data gaps will be to more thoroughly develop conceptual models. These models will include not only the basic geologic information, but also data from any new wells, estimates of source loading, contaminant transport processes, identification of discharge locations and potential receptors, and travel time to potential receptors. The data will be supplemented as appropriate by data collected on the regional flow systems for theses and dissertations and other research sources.

Closing

In general, we feel that what is presented herein and on the attached table is consistent with what has been communicated between all the parties, but the detail contained in this letter hopefully reiterates and clarifies P4's response to specific data gap issues. We expect that two related documents will be submitted to the agencies: (1) a work plan for a direct-push investigation of the alluvium submitted in early-August; and (2) a technical memorandum communicating the Phase II results, presenting new and revised conceptual models and additional data addressing the data gaps as discussed in the attached table. This later document will tentatively be submitted in January 2008. We feel this dialog has been very useful and that we have a clearer understanding of the agencies' expectations. We also hope that the agencies have a better feel for our approach and concerns in implementing this program. We strongly desire to move this program forward but also need to do it efficiently and intelligently. We hope that through continued communication and cooperation the groundwater investigation will be completed without further delay in the interest of everyone.

Respectfully,



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P4 RESPONSES TO - AGENCY/TRIBAL DIRECTION FOR GROUNDWATER CHARACTERIZATION AND DATA GAP ANALYSIS AT P4 PRODUCTION, LLC ENOCH VALLEY, HENRY AND BALLARD MINE SITES, IDAHO

ITEM	STATEMENT OR REQUEST
A.	***AGENCY STATEMENT*** **Shallow Alluvial Aquifers** As a general expectation, an adequate number of shallow alluvial monitoring wells must be distributed throughout the aquifers to fully characterize conditions and impacts to alluvial aquifers where CSMs indicate there is potential for water connectivity between source areas, such as open pits, backfills, and waste piles, and nearby alluvial aquifers. In other words, the number and location of monitoring wells must be adequate to confidently "describe the nature and extent of on-site and off-site impacts" to alluvial aquifers, to characterize conditions such as hydraulic gradients, flow directions, the nature and extent of contamination, and to estimate rates of contaminant transport.
	RESPONSE This may very well need to occur, but first P4 is first striving to collect data to better understand the association of contaminant flux from the sources and the hydraulic and chemistry associated with the toe seepage and transport in the alluvial system. These will be a components factored into the evaluation of remedial alternatives for the EE/CA. For example, at the Enoch Valley mine, monitoring wells MMW007 and MMW008 will be installed along the alluvial flowpath below the dump seep MDS026 (average selenium concentration of 0.12 mg/L; Drawings 3 and 5). This location is considered a most probable location for a potential impact to the alluvium and a logical place to learn more about the interaction between the waste rock dumps and the alluvial system. Data collected from this location will be very valuable assessing the best approach and priority for addressing other less probable alluvial pathways. However, P4 understands the agencies' concerns and are evaluating the feasibility of conducting a direct-push groundwater screening investigation in the alluvial aquifer this fall. This technology can be used to help assess the multitude of potential alluvial pathways without installing a vast number of permanent monitoring wells. The program will also provide a good complement to the well installation. However, alluvial drilling in July will help confirm that the alluvial material will be suitable for the direct-push technology. Details such as the analytical program also need to be developed. If the method is feasible, P4 will submit a work plan for the program for agency comment.
B.	***AGENCY STATEMENT*** Work plans for siting monitoring wells must consider many site-specific factors including the size of a potential source area, the size of adjoining alluvial areas, and the relationship between the source area and alluvial aquifers. The number and location of shallow wells must be adequate to measure rates of contaminant transport and to confidently

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	describe hydraulic gradients, flow directions, and nature and extent of contamination. In a phased groundwater investigation, the initial monitoring well(s) should be sited in a location(s) of anticipated worst-case conditions. Subsequent phases of the groundwater investigation may require additional wells to fully characterize each alluvial groundwater pathway. The number of monitoring wells needed to answer the questions of interest will vary from site-to-site and pathway-to-pathway and is dependent on site-specific factors. P4 is to sample all proximal seeps and springs in all adjacent geologic stratigraphic units to support the development of the CSM and the location of groundwater monitoring wells.
	RESPONSE P4 agrees that wells should be located in anticipated worst-case locations. The location where MMW007 and MMW008 are to be installed is one such location (discussed in the previous response). Data from these locations can then help guide the level of investigation needed for less than worst-case locations. Generally, the statements in the preceding paragraph agree with the approach that P4 is taking. This approach will also be supplemented by the direct-push alluvial investigation discussed in Item A. It should be noted, that all seeps and springs in the areas of interest have been sampled and have been and will be integrated with the groundwater CSMs and investigation. It should also be noted that alluvial aquifers confined in narrow valleys often do not need multiple wells to define hydraulic gradients. Springs, streams and topography can all be good indicators of hydraulic gradient of shallow, unconfined alluvial aquifers in these settings.
C.	***AGENCY STATEMENT*** **Intermediate and Deep Aquifers** As a general expectation, a sufficient number of wells must be distributed throughout the bedrock aquifers to adequately characterize impacts to intermediate and deep aquifer systems. Initial well locations are determined by known geologic features of the area and are based on geologic reports, exploration data, mine data, and geologic modeling based on empirical observations of surface geologic conditions. Where the CSM suggests water connectivity between source areas, such as open pits, backfills, and waste piles, and deeper aquifer systems, wells or other monitoring locations must be planned to validate the hypotheses. The number and location of monitoring wells must be adequate to confidently "describe the nature and extent of on-site and off-site impacts" to all probable intermediate and deep aquifer systems (i.e., Dinwoody, Thaynes, and Wells formations). Potential impacts from all mine waste units at each mine must be investigated, to determine groundwater flow directions, hydraulic gradients, and the nature and extent of contamination. The locations and number of shallow alluvial wells must be coordinated with the locations and number of bedrock wells to evaluate interactions between all shallow and deeper groundwater systems.
	RESPONSE

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	'The number and location of monitoring wells must be adequate to confidently "describe the nature and extent of on-site and off-site impacts" to all probable intermediate and deep aquifer systems (i.e., Dinwoody, Thaynes, and Wells Formations).' This simply may not be practicable or possible. P4 is first assessing the viability of these pathways with selected well locations. That said, P4 acknowledges the agencies' concern regarding the level of initial investigation in the Dinwoody Formation, and as presented in the response to specific mine site locations below, will include additional wells in the Dinwoody Formation during the 2007 Phase II investigation as allowed by the drillers' schedule and P4's allocated budget. After the initial data is collected and CSMs are revised, serious consideration should be given to risk to potential receptors and this incorporated into the development of future investigation phases. P4 will use the data collected during the Phase II investigation and incorporate it with data related to source loading, transport, discharge, receptor, and risk information to develop a fully integrated CSM. Based on these fully integrated CSMs, it is hoped that P4 and the agencies can agree on a reasonable approach to evaluating the nature and extent of contamination in the intermediate and deep aquifers that takes risk into consideration.
D.	***AGENCY STATEMENT*** Work plans for siting monitoring wells must consider many site-specific factors including the size of the source areas, the relationship and proximity of source areas to bedrock aquifers, and potential for structural controls to affect contaminant migration. If known geologic conditions presented in the CSM indicate the migration of hazardous substances in water may be controlled by the presence of a fault or the strike and dip of formation bedding, then appropriate bedrock wells must be sited to test for contaminant migration along the suspected pathway. Intermediate and deep monitoring wells should be sited in locations where worst-case conditions are anticipated. Bedrock wells may have to penetrate waste rock material or the Phosphoria Formation to test hypotheses, conceptual models, and hydrogeologic conditions. In such cases, appropriate drilling technologies must be implemented to prevent cross-contamination.
	RESPONSE P4 generally agrees with the preceding paragraph, and has considered these factors and issues when proposing locations of monitoring wells.
E.	***AGENCY STATEMENT*** As a quality assurance control, the agencies require directional surveys at deep monitoring wells. Drilling at depth can produce significant deviation in the borehole depending on the dip and strike of the formations. If not understood and

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	corrected, borehole deviations may result in significant water level measurement error and miscalculations of groundwater flow direction and hydraulic gradients
	RESPONSE P4 respectfully disagrees with this requirement. Measuring deviation in every deep borehole is an unnecessary step. Nowhere in any of the three mine areas are gradients expected to be flat, nor will wells be closely enough spaced within the same geologic unit, such that borehole deviation will effect the interpretation of the data. However, borehole deviation can be measured at anytime; therefore, if an area is identified where this level of accuracy is important then the method can be applied.
F.	***AGENCY STATEMENT*** ***Approved Method of Preparing Groundwater Data Gap Assessments*** In some instances, the agencies have found it difficult to review, assess, and comment upon P4's proposed groundwater monitoring work plans due to oversimplified CSMs compared to the extent and complexity of the mine sites and their hydrostratigraphy and incomplete and/or inconsistent supporting information. CSMs must be developed for each hypothesized site flowpath and source area utilizing known site-specific hydrogeologic conditions. Maps must include updated geology and appropriate scale (i.e., generally greater resolution). Multiple source areas at a mine require source-specific CSMs. Once the CSMs are developed, the design, number, and placement of wells/monitoring locations can be determined for individual source areas.
	RESPONSE It is agreed that in an ideal world more detailed information would be available. However, what has been used is what is currently available to best illustrate the CSMs. There is conflicting information, but this is not that uncommon when geologic maps developed for different purposes are compared (this is discussed further below). What is being asked for here is a detailed facility by facility investigation where the uncertainty for each facility is largely removed and every potential flowpath is investigated. We disagree with this approach for developing data. The site is large but there are many common features and this should be taken advantage of to reduce the amount of data collected. What is need is an investigation that focuses the effort on the key flowpaths and associated data that are needed to develop the EE/CA and select effective and appropriate remedial responses. Our focus is initially on collecting data to assess the significance of the different types of flowpaths, opposed to evaluation of every potential flowpath. Once this assessment has been made and CSMs are updated, then any future data collection (if needed) can be focused appropriately. To reiterate, P4 disagrees with the position that every hypothesized site flowpath associated with each potential source area needs to characterized. Many of the hypothesized flowpaths at different areas have similar

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	characteristics. A more prudent approach is assess the different types of flowpaths at several locations then take that knowledge and develop appropriate plans for additional characterization, if needed. P4 does not feel that an updated detailed geologic mapping program is required to further developed the CSMs. The geology mapping that has been used has been derived from both historic (e.g., Drawing 3) and mine-specific mapping (e.g., Drawing 6). There have been issues of these sources conflicting because of the different scale and detail of the mapping. The regional mapping focused on regional structural features and stratigraphy, where as the mine-specific mapping focused on the ore units and immediately adjacent geology. The local mapping may identify small alluvial deposits in minor drainages where as the regional mapping does not. Such conflicts between mapping with differing objectives and scales are not uncommon, but both are of use in the site characterization. P4 has utilized these multiple sources combined with local geologic knowledge and field verification to develop the CSMs and to propose well locations. The level of geologic mapping suggested by the agencies would take much of a field season is not needed. It may be that if the investigation becomes focused on a specific-type of flowpath and greater geologic resolution is needed, a focused detailed geologic mapping program may be implemented.
G.	***AGENCY STATEMENT*** To assist the agencies with their assessment of the number and placement of wells and monitoring for each potential source area, P4 must complete a data gap analysis addressing the items listed below. Each data gap analysis is a process to methodically determine where to best place additional monitoring wells to determine the pathways and extent of contamination to groundwater from the site. The data gap analysis consists of four steps, as follows: 1) Prepare an inventory of all potential primary source areas at each mine, i.e., soil, waste rock, and ore stock piles), and list all unfilled pits, backfilled pits, external waste piles, and natural and man-made ponds. a. Show all potential primary source areas on a site map(s) at an appropriate and accurate scale. b. Provide a summary of all existing groundwater information (including exploration and mine data) pertinent to each potential primary source including underlying formations(s), depths to shallow and deep groundwater, and known concentrations of COCs in potential source areas (i.e., ponds and seeps) and groundwater. 2) Prepare source-specific conceptual models that identify potential significant groundwater pathways for each source area listed under item 1 above. a. Prepare accurate source-specific plan-view maps and cross sections at an appropriate scale and with sufficient detail to show potential groundwater pathways and depths to alluvial and bedrock aquifers. b. Prepare longitudinal sections (along strike) at an appropriate scale and with sufficient detail for each source

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	area to show potential groundwater pathways and depths to alluvial and bedrock aquifers along strike. c. Provide geologic mapping that depicts geologic features that may influence groundwater movement, including, but not limited to, faults, bedding, shear zones, discontinuities, aquitards, depth to groundwater, the potentiometric surface, hydrostratigraphic units, and preferential flow paths. d. Identify source-specific siting or mine construction features that may affect the migration and transport of hazardous substances to groundwater. e. Estimate contaminant loading to groundwater. f. To reduce the number of CSMs, conceptual models may address similar source areas, as applicable. i. Combine source areas based on their spatial proximity, as applicable. ii. Combine source areas based on their hydrogeologic similarities, as applicable. g. Identify potential onsite and offsite exposure pathway(s) for every source-specific CSM (e.g., discharges to local surface water, leakage to intermediate and regional groundwater systems). 3) Identify all existing and proposed groundwater monitoring locations for each source area listed under item 1 above. a. Provide a site map(s) at appropriate scale to show all existing and proposed monitoring locations. b. Provide accurately correlated cross sections displaying proposed monitoring well completions with respect to geologic formation, hydrostratigraphy, and structure. c. Individual monitoring locations may address multiple source areas, as appropriate. i. Groundwater monitoring locations may include wells and springs. ii. Identify the provenance of each spring utilized as a groundwater monitoring location. 4) Based on items 1, 2, and 3 above, identify all groundwater monitoring data gaps for each potential source area. The data gap analysis methodology described above will likely be an iterative process and will need review, revision, and refinement based on the findings of each phase of drilling and groundwater monitoring. With each phase of the investigation, it is likely that new data gaps will become apparent and previously identified data gaps will be resolved without additional study. In summary, the agencies recognize that a groundwater investigation is a dynamic process and there is no single approach that fits all groundwater investigations. Therefore, strategies for characterizing groundwater and testing CSM

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	assumptions must be based on site-specific factors. The number and depth of groundwater monitoring wells will vary from site to site depending on local hydrogeologic conditions and the complexity of the site. Any approach, however, will involve development of a CSM(s) at an appropriate scale(s) to support a systematic assessment of data gaps. The agencies generally expect P4 to collect adequate quality data to test and refine their site conceptual models, answer key questions about the areal and vertical extent of contamination (if present), provide adequate information to support development of an Engineering Evaluation/Cost Analysis, and provide baseline information that can ultimately be used to measure the success or failure of the selected remedy. It is important to note that the agencies are open to considering innovative approaches and methods of investigation to answer questions of interest at the P4 mine sites, but the agencies will expect P4 to provide sufficient documentation and rationale to support the use of innovative approaches.
	RESPONSE P4 largely agrees with this last paragraph. However, we do not agree that the approach presented in this document best achieves the objectives of the statement in the preceding paragraph. It also needs to recognized that at a site the size and hydrogeologic complexity of the P4 mines, the extent of contamination is never going to be completely defined. Effort expended toward this goal would be enormous. What is needed is a focus on where extent is associated with impacts that have a legitimate potential for causing harm to human and/or ecological health, and those pathways which will drive the remedial alternative selection in the EE/CA.
1.	***AGENCY STATEMENT*** ***Mine Specific Groundwater Characterization Data Gaps*** As previously noted, the agencies have identified mine specific data gaps in the groundwater characterization during their review of P4's *Version 5 Monitoring Well Installation Technical Memorandum Final 2005 Phase II Supplemental SI Groundwater Work Plan* (MWH, February 2007). These data gaps are in addition to those previously identified by P4. As stated above, P4 is directed to complete a data gap analysis using the methodology described above. As part of this, P4 is directed to review the agencies initial data gap analysis and to develop and implement plans to fill the data gaps identified for each mine (below). When available and upon agency agreement, P4 may provide existing supplemental information to explain, modify, or *resolve* the data gaps identified by the agencies. Data gaps that cannot be resolved with existing supplemental information provided by P4 must be filled during subsequent phases of the investigation. The oversight agencies will review all compiled data and documentation to determine when the extent groundwater characterization is complete.
	RESPONSE

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	The approach P4 will take to each of the data gaps is presented for each of the following items below, as appropriate. In some cases P4 will address the data gap concern with additional or expanded data and CSMs. In other cases, P4 agrees to the data gap and will address it with additional investigation as allowed for in 2007, or if not practicable in 2007, in a subsequent phase of investigation.
2.	***AGENCY STATEMENT*** **Enoch Valley Mine** **EVM Shallow and Intermediate data gaps** • A-A' is a good overall CSM but is too large in scale to evaluate local, intermediate, and regional flow paths along the reach of the mine.
	RESPONSE The local alluvial flow pathways, and in some cases the intermediate flow pathways, can in many cases be illustrated on more detailed, smaller-scale cross sections like Drawings 5, 7 and 9. However, it needs to be recognized that the data needed to develop more resolution and support a finer scale for the bedrock geology are simply not available, nor are likely to be available without a major research and deep drilling program. We disagree with the general statement that the scale is to large to develop and evaluate CSMs for regional flowpaths. In the case of the EVM, the basic geology presented is sufficient to illustrate that water that enters the bedrock units from the mine area is likely to flow down dip toward the southwest and toward the axis of the anticline. However, it is recognized that additional illustrative cross sections may be beneficial for presentation and discussion purposes in some specific cases where unique features (bedrock faults) or where lateral flow may be present. These cross sections will be considered on a case-by-case basis in future submittals to address specific issues.
3.	***AGENCY STATEMENT*** o Provide multiple CSMs (cross section view) along the length of mine to adequately characterize the site. These CSMs should have a scale similar to D-D' to provide more detail on how pit and wastes contact and possibly impact aquifers in Qal, Trd, Trt, and PPw.
	RESPONSE There is clearly a value in the requested cross sections in communicating the CSM and the reasons behind the approach to investigating or not investigating certain pathways. This will be done as the project progresses into the next phase. In some cases, the cross sections will be generic representing locations with common features. The focus will

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	be on plausible pathways.
4.	***AGENCY STATEMENT*** o Provide a longitudinal section(s) along the strike of the mine at an appropriate scale and with sufficient detail to show potential groundwater pathways and depths to shallow and deep aquifers.
	RESPONSE Because the mines are developed along strike, a longitudinal section will show the mine pit setting on top of the Phosphoria Formation, for example. The mine pit walls and waste dumps contact other units but these relationships are all better illustrated with sections perpendicular to the mines and strike of the geology. However, in some cases, the suggested sections could add to the understanding of the CSM. Such cases may include plunging structures or cross cutting faults. The cross sections will be developed on a case-by-case basis where they will add to the understanding of the CSM.
5.	***AGENCY STATEMENT*** o Provide pre- and post-disturbance contour maps of the mine to assist with the evaluation of the mine's potential areal impact to local, intermediate, and regional flow paths.
	RESPONSE When this has been investigated in the past it was found that pre-mine topography of suitable scale and format is generally not available. It was suggested that historic USGS 7.5 minute topographic maps are available. This will be researched further. However, our recollection was that this was considered in the past but rejected as an option. The likely problem is that this information is only available in graphic form, whereas, the more modern mapping is available with digital contours, etc... The options with the graphical maps are to use them as underlying image files, which limits the accuracy and usefulness, or to digitize the required information, which is expensive and time consuming. There may be cases where the pre-mine topography is important for illustrating a CSM. In these cases, P4 will consider options for pulling in the pre-mine topography. This has been done for some of the maps presented in the Tech Memo (e.g., Drawing 6). However, the topography was digitized by hand for the specific area illustrated, and detailed maps were available in the company files.
6.	***AGENCY STATEMENT***

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	• Impacts to groundwater in Trd and Trt are not adequately characterized. Cross section A-A' and the plan view on Drawing 3 show waste piles and pits could impact intermediate aquifers in the Trd and Trt to the west/southwest of the EVM waste piles and pits. o Cross section A-A' (Drawing 4) shows two intermediate flow paths: • On A-A', a shallow local flow path is shown to cross the Trd and discharge to Trt, alluvium, and/or basalt west of the mine in Rasmussen Valley. Available shallow Se data indicates this water may be contaminated; i.e., Trd spring and pond data south of pond MSP021 indicate groundwater along similar shallow flow paths is contaminated with Se. • No wells have been proposed west of the mine along the westerly shallow flow path within the Trd or Trt. Locate monitoring wells to characterize this flowpath. It is suggested to include a Trd well near MMW009 and a Trt well near MMW013, enabling characterization of COCs and vertical hydraulic gradients between these formations and the alluvium.
	RESPONSE P4 will evaluate the possibility of installing a well in the Trd near station MST144 and the planned MMW013 during this 2007 phase of the investigation. At this location, the majority of the Trd section is overlain by a waste dump. This location appears to a "worst-case" location where the majority of the potential Trd recharge area is overlain be waste dump, and the associated dump seep has elevated selenium concentration. The Trd well can also be coupled with an alluvial well (MMW013) to provide some additional vertical characterization. The ability to install this well during the 2007 field work will be dependent upon drill rig availability, but it isrecognized that installation of this well in 2007 will help fill a data gap that may need to be pursued further in future phases. Installation of this well will be considered a priority. The location near the proposed MMW009 has only a minor amount of waste dump overlap onto the unit's recharge area, and where exposed in the mine pit, it was only likely exposed in the upper portion of the high wall. A cross section will be developed to illustrate this in more detail in a future submittal. P4 does not feel a Trd well is needed in this area at this time. However, the CSM for this location and the results from the Trd well to be installed near the MMW013 location will be evaluated, and this area will be reconsidered in the future. P4 does not feel that the Trt is a viable flow path and will provide further explanation in a future submittal. Briefly, significant sources are not present on the Trt outcrop. The Trd, if found to be impacted, could be a source to the Trt, but

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	cross bed flow is expected to be minor. If the Trd is proven to be significantly impacted, the CSM for the Trt will be reevaluated. However, until an impact to the Trd is shown, investigation of the Trt is premature.
7.	***AGENCY STATEMENT*** o No ponds or springs are monitored in the Trd northwest of MSP021, although cross section A-A' indicates a similar situation probably exists in the Trt, Trd, and alluvium as described above. The only proposed well in this area is MMW012, which will be completed in the overlying alluvium. Develop plans for monitoring wells to characterize the intermediate flow path in the Trd northwest of MSP021.
	RESPONSE The situation described is similar to that for near MMW009 above, although there may be more overlap of waste dump on the Trd. It is suspected that the location could be impacted by either down dip or longitudinal groundwater flow originating from the waste dump which directly overlies Trd. However, actual contact with the backfilled mine pit is likely minimal. This request will be further developed and considered for future phases of the investigation. A CSM will be further developed, and the data discussed in item 6 above, in particular any groundwater data from near MMW013, will be considered in the assessment, Well installation my be indicated in a future phase based on the refinement of the CSM, but P4 would like to further develop the CSM and supporting data before this decision is made.
8.	***AGENCY STATEMENT*** o On A-A', a deeper intermediate flow path is depicted along the dip of the Trd bedding, discharging somewhere to the west (note that the discharge location(s) for this deeper intermediate flow path in the Trd is presumably beyond the western endpoint of A-A'). A-A' indicates that shallow Se contaminated water may reach these deeper flow paths in the Trd. No wells are proposed for this intermediate aquifer in the Trd. Develop plans for wells to characterize this flow path.
	RESPONSE No springs or wells in the suggested discharge area indicate any impacts of significance. P4 will consider further investigation in this area if characterization closer to the source indicates significant impacts and preliminary transport calculations indicate that contamination has had sufficient time to reach the area of interest. Drilling the center of the anticline would involve wells >1,500 feet deep and are not likely to be considered efficient. Investigation of the discharge end of the conceptual flowpath would likely involve characterization of the Henry Fault. This will be considered further as data on the Trd flowpath are developed.

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9.	***AGENCY STATEMENT*** o Cross Section D-D' and the plan view on Drawing 3 show waste piles and pits could impact intermediate aquifers in Trd to the south of the EVM. • Trd spring and pond data south of MSP021 indicate groundwater in Trd is heavily impacted with Se along these shallower flow paths. MMW007 and MMW008 only monitor the alluvial flow path (note that Drawing 3 shows MMW007 and MMW008 are completed in Trd whereas cross section D-D' shows these wells will be completed in alluvium). No wells are proposed for this intermediate aquifer. Add one Trd well near MMW007 to evaluate the Trd groundwater. Develop plans for additional monitoring wells to characterize this flow path, as needed.
	RESPONSE The spring and pond data do not indicate that the Trd is heavily impacted with Se. Only that shallow flows paths on and very near the waste dump are impacted. There is no suggestion that any of these features have a Trd source. (The alluvial body that MMW007 and MMW008 will be placed in was not large enough that it was mapped at the regional scale, and is not shown on Drawing 3.) As noted in Table 5.1, MMW007 and MMW008 may be installed in the alluvium or Trd. This is because the wells will be installed in first water, and the level of saturation in the alluvium is uncertain. It may only be seasonal. However, it is assumed that the alluvium will be water bearing, and the well in the underlying Trd near MMW007 is a consideration for evaluation of the vertical extent. However, if the alluvium is found to be un-impacted then the need to investigate of the Trd in the same area needs to be carefully considered. Similarly, the results from the Trd well, which may be installed in 2007 near MMW013, should be considered when evaluating the need for a well near MMW007. Any plans for additional well installation will be made after the results from the initial installation program are evaluated and the CSM is updated.
10.	***AGENCY STATEMENT*** o Until accurately determined, estimate the potentiometric surface of the intermediate aquifer in the Trd should be shown on cross section D-D'.
	RESPONSE At this time we consider that the shallow Trd aquifer in this area is unconfined, and the potentiometric surface for the alluvial and Trd system are approximately the same. At depth in the Trd this probably does not hold, but any depiction of the potentiometric conditions in deeper Trd beds is pure speculation.

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11.	***AGENCY STATEMENT*** o There are no monitoring locations shown for the alluvial flow path directly south/southeast of MSP017 (southeast of the southern tip of waste pile MWD091). MSP017 water is highly contaminated with Se. Locate a shallow well near the toe of the southeast end of this waste pile along this probable flow path.
	RESPONSE P4 would first like to validate the flowpath with the MMW007 and MMW008 wells in the adjacent alluvial channel. Based on our conceptual model the MMW007/008 flow path is worst case based on a historic channel that extends well up, beneath the waste dump. A similar condition is not present in the suggested area. However, plans for a screening level investigation using direct push sampling technology is being developed, and this area, as well as the MMW007/008 area, will be considered for that investigation. Any future decision to install a well in this area will be based on all of the data described in a refined CSM.
12.	***AGENCY STATEMENT*** o There are no monitoring locations other than dry springs shown for the probable alluvial flow path northwest of MWD091. Locate a shallow well near the northwest toe of this waste pile along this probable flow path.
	RESPONSE At this time, P4 does not consider that there is a valid pathway in the area described. However, P4 will further evaluate the CSM for this area. In addition, MMW012 will provide some data to help assess the potential for a pathway in the adjacent area where the source and release mechanism are basically the same. Topography suggests that the MMW012 location is the most ideal location for a well to evaluate the alluvial flowpath in this area. The likely outcomes of further evaluation of this area will be a CSM presented to the agencies that supports the P4 case that a pathway is not present. However, a proposal to include this area in the direct push investigation, or installation of a well, are also possible outcomes.
13.	***AGENCY STATEMENT*** **EVM Deep (Wells Formation) data gaps** • Due to the length of the mine (EVM is approx 3 miles long), one deep well in the Wells Formation will not be sufficient to adequately characterize deeper regional flow away from the mine. Cross section A-A' suggests that water from the pits and waste piles infiltrate into the Wells Formation and travel to deeper regional aquifers along the entire reach of

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	the mine. The hypothesis that potentially impacted groundwater will travel along the bedding planes in the direction of strike to well MMW009 must be tested by collecting supporting data that can only be provided by additional wells in the Wells Formation. Two additional deep wells should be installed down dip of the mine, one located southeast of MW009, in the vicinity of MMW013, and one well northwest of MMW009, in the vicinity of MMW012.
	RESPONSE Because of the geology in this area, the wells have to be relatively deep to reach the Wells Formation downgradient of potential sources. During the June meeting it was reported that the MPW020 well location, in which MMW009 will be installed, was actually dry within the Wells Formation to the total depth of 810 feet. P4 will still try to deepen and complete a well at this location. In addition, P4 will contact Agrium and investigate the feasibility of getting data from their production well at the south end of the EVM (MPW006). P4 will only consider additional deep wells in this area after collecting data from MMW009, possibly MPW006, and further assessing the CSM. Additional drilling to this depth simply to increase spatial coverage alone is not justified. The flowpath considered with the installation of MMW009 is representative for potential impacts to the Wells Formation at EVM. Data from this location will allow of a more informed discussion of the need for additional deep wells in this area. Before further costly investigation of the regional Wells Formation aquifer is conducted, the CSM for this flowpath needs to be further developed with any data actually collected, as well as other data that may be available in dissertations and theses. The expanded CSMs will need to include estimates of potential loading, dispersion/ attenuation, identification of discharge points and potential receptors, and travel times to discharge points or receptors.
14.	***AGENCY STATEMENT*** • Drawing 3 suggests that a significant structural feature may be present near the northwest end of the mine directly north of MMP045. The structural feature occurs where the strike of the bedding of the northwest limb of the Snowdrift Anticline (the anticline that forms Rasmussen Ridge) shifts from a northwest to a more westerly strike directly northwest of MMP045, thus forming a "hinge" in the bedding at this location. Also, the strike of the Enoch Valley Fault changes similarly. This hinge is probably formed as a result of an increase or change in compressive forces that formed the folds. This often results in increased fracturing and shearing of the bedrock at these locations that can affect groundwater flow. Potential deformation, shearing, and fracturing of the bedding in the area of the "hinge" is not depicted in any of the associated drawings (Drawings 3 and 4). Develop plans to complete additional surface mapping, boreholes, and/or groundwater monitoring wells to investigate this structural feature and to determine its potential impact on Se fate and transport, both vertically and horizontally.
	RESPONSE

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	There is an inflection of the strike and dip of the bedrock units at that location; however, a large structural feature transecting bedding is uncertain. P4 will collect available data from this area, and if needed, conduct additional surface geologic mapping. These data will be presented in a future submittal for evaluation by the agencies to assess if a data gap is present. P4 will also conduct this assessment and make their recommendation as to the presence or absence of a data gap and, if appropriate, measures to address the gap.
15.	***AGENCY STATEMENT*** **Henry Mine (HM) Data Gaps** **HM Shallow and Intermediate data gaps** • B-B' is a good overall CSM but is too large in scale to evaluate local, intermediate, and regional flow paths along the reach of the mine. o Provide multiple CSMs (cross section view) along the length of mine to adequately characterize the site. These CSMs should have a scale similar to E-E' to provide more detail on how pit and wastes contact and possibly impact aquifers in Qal, Trd, Trt, and PPw. o Provide a longitudinal section(s) along the strike of the mine at an appropriate scale and with sufficient detail to show potential groundwater pathways and depths to shallow and deep aquifers. o Provide pre- and post-disturbance contour maps of the mine to assist with the evaluation of the mine's potential areal impact to local, intermediate, and regional flow paths.
	RESPONSE See response to Items 2, 3, 4 and 5 above. The issues surrounding the cross-sections and pre-/post-mine topography are essentially the same at the Henry and Enoch Valley Mines.
16.	***AGENCY STATEMENT*** • E-E' shows the backfill pit at MWD086 was about 50 feet deep. B-B' shows the backfilled pit was about 500 feet deep. The depth of mining excavation into the PPw would probably have been much greater than is indicated in E-E'. Note that Drawing 8 and cross section G-G' show the main portion of the pit at MMP043 is in the Rex Chert (Pp) to the east of the Meade Peak unit (Ppm). Because the Meade Peak member is the source of produced phosphate ore,

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	the offset of the pit into the Rex Chert suggests that a mapping or drafting error may have occurred. Confirm that this configuration is correct or make appropriate corrections to the figures.
	RESPONSE The depth of the pit in B-B' appears to be incorrect. This will be corrected in future submittals, and the depth shown on section E-E' will also be checked. The depictions on Drawing 8 and the associated cross-sections will be resolved if possible. The problem arises because the geology is from pre-mine mapping and the topography is post-mine/pre-reclamation; therefore there are two different planes and times being depicted, and reclamation has covered up actual pit bedrock geology. It can be assumed that there is actually Ppm in the bottom of the pit and the surface expression of Ppm shown on Drawing 8 has actually been removed. The resolution of this for future submittals will involve some extrapolation. The appropriate corrections will be made.
17.	***AGENCY STATEMENT*** • Anecdotal evidence indicates groundwater was exposed in the HM pit. If accurate, cross sections such as E-E' must illustrate how the pits intersect shallow groundwater. Other information also indicates that the HM pits may have intersected groundwater, including: o Table 5-1 shows the depth to groundwater at MPW023 to be approximately 33 to 41 feet below ground surface (bgs). MPW023 is supposedly at the same location as proposed well MMW010, which would place the shallow groundwater elevation at approximately 6,450 feet. This places the water table elevation at approximately 6,407 to 6,419 feet, and above the bottom of the pit as shown in E-E'. o Drawing 7, E-E' shows groundwater at MMW010 will be at an approximate elevation of 6,400 feet, placing it near or above the depicted pit bottom if the pit is only 50 feet deep. This suggests that a substantial column of saturated material could be in the pit at the other deeper mine cuts depicted in B-B'.
	RESPONSE Comment noted and P4 will reassess this for future revisions to the CSMs and submittals of the groundwater technical memorandum.
18.	***AGENCY STATEMENT*** • Table 5-1 shows the depth of MMW010 will be 150 feet. The text in Section 5.2 states that MMW010 will be drilled to

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	a depth of approximately 100 feet. Drawing 7 E-E' indicates that MMW010 will be drilled to a depth of approximately 60 feet. Appropriate corrections must be made to future documents.
	RESPONSE Comment noted. This issue will be resolved in future submittals.
19.	***AGENCY STATEMENT*** • Table-5-1 states that MMW010 will penetrate alluvium or Trd beneath the alluvium, but E-E' shows it will penetrate Pp. Appropriate corrections must be made to future documents.
	RESPONSE Please note that all the contacts at MMW010 are inferred. The drawing is being interpreted too literally. Schematically, MMW010 may be advanced to the top of Pp but the objective is to monitor the alluvium. While the Trd contact is nearby, the well is unlikely to be drilled into the Trd. This will be corrected in future discussions of this location.
20.	***AGENCY STATEMENT*** • No monitoring locations are shown for the potential alluvial flow paths northwest of MMP041/MWD085. Locate a shallow well near the northwest toe of this pit/waste unit if an alluvial flow path is evident.
	RESPONSE This end of the mine is on the top of a rise that slopes back to the southeast. Therefore, an alluvial flowpath to the northwest is not evident. Any flow originating in this area will be directed to the southwest and to the monitoring locations in the cut in the ridge between MWD088 and MWD085. P4 will provide more detailed topographic data for this area and possibly photographic documentation.
21.	***AGENCY STATEMENT*** o The Trd flow paths in cross section B-B' are shown to travel east along bedding planes of the Trd. No wells are placed in this intermediate aquifer. Initially, locate one monitoring well in the Trd near where B-B' intersects the easternmost lobe of MWD086. Note that if confinement in the Trd is indicated, then additional wells may be required to adequately characterize flow paths within the Trd.
	RESPONSE

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	Flow in the Trd (Dinwoody Formation) is recognized as a data gap. P4 will assess this location and install a well during this year's drilling activity if the driller's schedule allows. If we are unable to include this well in this season's drilling, then this location will be included in the next phase of drilling. That is unless data collected in 2007 provides sufficient refinement to the groundwater CSM such that the Trd is no longer considered a pathway.
22.	***AGENCY STATEMENT*** o Discharge for the Trd on B-B' is shown to be along the Henry Thrust Fault, but no springs are shown or sampled that verify this model. Springs along the fault must be inventoried and sampled.
	RESPONSE No springs have been identified in this area. Any discharge along the fault in this area likely enters the Qw directly without surface expression. Please note that there are a number of wells in this area, including MMW005 where selenium has not been detected.
23.	***AGENCY STATEMENT*** **HM Deep (Wells Formation) data gaps** • Due to the length of the area in question (HM is approx 5 miles long), one well in the Wells Formation at MMW011 is not sufficient to adequately characterize deeper regional flow away from the mine. Cross section B-B' suggests that water from the pits and waste piles infiltrate into the Wells Formation and travel to deeper regional aquifers along the entire reach of the mine. Locate two additional deep wells down dip of the mine into the Wells Formation, one located west of MMP041 and one well southwest of MMW010.
	RESPONSE Due to the steep dip of the bedrock units in the Henry mine area, approximately 70 degrees, the Wells Formation presents a very deep drilling target where it is down dip of the mine wastes. Well MMW011 is positioned in an area where it is postulated that there may be lateral flow toward the Little Blackfoot River from Wells Formations beds that abut the mine pits. This represents a more local to intermediate flowpath within the Wells Formation. A well west of MMP041 would be up dip and uphill from the mine. A well located southwest of MMW010 presents a similar condition. Recharge to the portion of the Wells Formation intercepted by a well west of MMP041would likely be from near the Little Blackfoot River, unless significant cross-bedding flow is occurring. This condition is depicted in Cross Section B-B' because of the regional topography and restrictions on down dip flow. (In actuality, flow is most likely

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	in or out of the page perpendicular to the section.) If there is cross bedding flow it is likely to be very slow. Thrust faults are typically not flow conduits, but flow barriers; however, if fracturing along the fault in the adjacent bedrock has created a conduit, the flow in the Well Formation could be down dip toward the Henry Fault. However, there is not much hydraulic gradient to push groundwater in that direction. Considering these conditions it is postulated that the most direct pathway for groundwater flow in the Well Formation in this area is largely along strike to locations where the ridges formed by the Well Formation transected by drainages. This is the reason for the placement of MMW011. If there is a regional flowpath in the Well Formation, it is also likely to the northwest and southeast in the direction of strike. Before further costly investigation of the regional Well Formation aquifer is conducted, P4 will further refine the CSM for this flowpath using not only the results from MMW011, but also other data that may be available from other wells, and in dissertations and theses, for example. The expanded CSMs will need to be expanded to include estimates of potential loading, dispersion/ attenuation, identification of discharge points and potential receptors, and travel times. Based on the refined CSMs for the deep Wells Formation flowpath, P4 will discuss with the agencies the need for further assessment of the regional aquifer. MMW011 will test a local to intermediate flow system in the Wells Formation, which likely represents the upper level of a regional system; however, this system likely flows with strike, not dip.
24.	***AGENCY STATEMENT*** • Drawing 3 suggests that a significant structural feature may be present in the vicinity of the Little Blackfoot River where it crosses the mine. Similar to the EVM, the suspected structural feature appears to be a "hinge" in the bedding where the orientation of the bedding strike shifts towards the west just north of the structural feature. Secondary hydraulic conductivity and potential flow conduits due to deformation, shearing, faulting, or fracturing of the bedding in the area of the "hinge" are not depicted in any of the associated drawings (Drawings 3, 4, 8, and 9). Develop plans to complete additional surface mapping, boreholes, and/or groundwater monitoring wells to investigate this structural feature and to determine its potential impact on Se fate and transport, both vertically and horizontally.
	RESPONSE The inflection in the bedding depicted on the map where the Little Blackfoot River bisects the ridge formed by the Wells Formation is largely due to the effect of the topography. Monitoring wells MMW019 and MMW011 will be located in this area. No further investigation of this area is warranted at this time. P4 will provide the agencies further topographic and geologic data to support this position.
25.	***AGENCY STATEMENT***

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	• Drawing 3 shows a lateral offset in the bedding directly south of MMP044. Secondary hydraulic conductivity, flow conduits, or hydraulic barriers to flow due to the presence of the fault have not been investigated. Develop plans to complete additional surface mapping, boreholes, and/or groundwater monitoring wells to investigate this structural feature and to determine its potential impact on Se fate and transport, both vertically and horizontally.
	RESPONSE P4 will look at this area in more detail. An additional geologic map is likely available for this area, and it will be reviewed. If a conceptual pathway is developed, the need and technical practicability of investigating it will be assessed. This assessment will have to include potential loading to the feature, as well as transport to potential receptors. Given the potential complexity of this location, the technical difficulties may be overwhelming and a solution to adequately characterization may not be viable.
26.	***AGENCY STATEMENT*** **Ballard Mine (BM) Data Gaps** **BM Shallow and Intermediate data gaps** • C-C' is good overall CSM but is too large a scale to evaluate local, intermediate, and regional flow paths along the eastern and western units of this mine. o Provide multiple CSMs to adequately characterize the site. These CSMs should have a scale similar to H-H' to provide more detail on how pit and wastes contact and possibly impact aquifers in Qal, Trd, and PPw. o Provide a longitudinal section(s) along the strike of the mine units at an appropriate scale and with sufficient detail to show potential groundwater pathways and depths to shallow and deep aquifers. o Provide pre- and post-disturbance contour maps of the mine to assist with the evaluation of the mine's potential areal impact to local, intermediate, and regional flow paths.
	RESPONSE See response to Items 2, 3, 4 and 5 above. The issues surrounding the cross-sections and pre-/post-mine topography are similar to the Henry and Enoch Valley Mines. However, as shown in Drawing 10 of the Groundwater Tech Memo, data were available to reduce the scale of the plan map and to provide more detailed topography. In addition, the geology is more complex at the Ballard Mine, which also presented a greater requirement for the more detailed map. P4 agrees with the agencies that addition geologic sections will be beneficial for describing the hydrogeologic CSMs for

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	the Ballard Mine area. These will be provided as appropriate in future submittals when needed to explain potential data gaps. Ballard Mine in particular will benefit from additional understanding developed at Henry and Enoch Valley, and this may be also applied in future submittals.
27.	***AGENCY STATEMENT*** • On the east side of the mine, several surface water sample locations are highly contaminated with Se, including MST094, MST095, MST096, MSG005, and MSG006. o Given the known severity and extent of the problem, characterization must include sufficient monitoring locations to determine which sources (MMP039, MWD084, MWD082, MMP037, and/or MMP040) along the east side of the mine are the primary contributors of Se to groundwater. This will be important in completing the EE/CA and selecting the removal actions for the east side of the mine. Available data do not discriminate between the numerous potential sources. o The numerous monitored springs and streams southeast of units MWD082, MMP037, and/or MMP040 are highly contaminated with Se. The extent of groundwater contamination to the southeast, however, has not been investigated. Locate additional springs and/or monitoring wells in addition to MMW018 to evaluate the full extent of contamination to the southeast.
	RESPONSE P4 feels that it is unlikely that remedial solutions for individual sources will vary significantly at the Ballard Mine. If hypothetical Waste Dump A is found to be a selenium source, then it is likely that Waste Dump B will also. Remedial solutions in and around the different potential sources at the Ballard Mine will likely be very similar. Because of this, P4 does not feel that quantification of every potential source is required for completing the EE/CA. Instead, P4 has focused on understanding how the various pathways in the various media are active. Focusing on reducing the impacts to specific pathways that present a level of risk to human health or the environment should be the focus of the remedial alternatives selected. To address the potential distribution of contaminants in the shallow alluvial aquifer down-gradient of the waste dumps and mine pits, P4 is evaluating the feasibility of using a direct-push sampling program. This program would utilize the direct-push technology to collect screening level water quality samples from the alluvial aquifer. Once analyzed and evaluated, these data may be used to strategically place a few wells to calibrate the screening level delineation. Wells installed in the 2007 field season can also be used as a calibration point in the direct-push investigation. Near-real time sample analysis is also being explored for this program. However, to do this effectively selenium would have to be one of the analytes. There does not appear to be a readily practicable selenium method to translate to a field laboratory

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	setting for a short-term program of this size. P4 will develop a brief work plan for conducting the direct-push sampling program and submit this to the agencies for their comment. The goal will be to execute the program by mid-Fall 2007.
28.	***AGENCY STATEMENT*** o Locate monitoring wells in the Trd to the northwest of MMW018 along with additional alluvial/Trd wells to the north-northwest of MMW018 and also down-gradient of MSG005.
	RESPONSE P4 will evaluate the possibility of relocating MMW018 in a position that will prove greater coverage of the alluvial system in this area. This will involve obtaining an access agreement for land not owned by P4. P4 understands the agencies' concern in general, but the reason for the concern with the Trd specifically in this area is uncertain. The Trd in this area contacts very little of the mine waste and is not in a configuration that would be readily impacted. If the Qw is found to be highly impacted, then investigation of the Trd below the Qw may be warranted in a future phase. P4 will further expand the CSM of this area because at this location an upward hydraulic gradient from the Trd to the Qw is suggested. In addition, MSG005 is not a highly impacted spring. The focus should be on areas such as MSG006 and the alluvial system initially. P4 will further develop the CSM of this area and present it to the agencies in a future submittal.
29.	***AGENCY STATEMENT*** o No monitoring locations (springs or wells) are shown for the potential alluvial flow paths east/southeast of MMP039 and MWD084. Initially, locate at least two shallow wells to the east and southeast near the toe of this pit/waste unit.
	RESPONSE P4 suggests that this location is also appropriate for the direct-push investigation described in Item 27.
30.	***AGENCY STATEMENT*** • At the central portion of the mine at MMP036, the open pit contains two ponds/wetlands (see Drawing 10) on top of

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	the unmined portion of Ppm. No Se data are shown for these ponds. Water quality data must be collected from these ponds/wetlands.
	RESPONSE These data have been collected and will be provided to the next groundwater investigation submittal.
31.	***AGENCY STATEMENT*** • On the southwest side of the mine, surface water sample locations appear to be highly contaminated with Se, including MST067, MST068, and MST069. o Given the known severity and extent of the problem, characterization efforts must include sufficient monitoring locations to determine which potential sources (MWD080, MWD081, MWDO83, MWD093, MMP035, and/or MMP036) along the southwest side of the mine are the primary contributors of Se to groundwater. This will be important in completing the EE/CA and selecting the removal actions for the southeast side of the mine. Available data do not discriminate between the potential sources.
	RESPONSE Please see the response to Item 27 above. As stated in that response P4 does not feel it is necessary to breakdown each potential source as it is unlikely that significantly different remedies will be developed. In addition, the area discussed is also a good candidate for a direct-push investigation, and wells MMW16A and MMW15A have been installed in this area and will help in the evaluation. Data from these wells and the tentatively proposed direct-push program will be evaluated prior to proposing any additional wells.
32.	***AGENCY STATEMENT*** o The monitored streams southwest of the mine are highly contaminated with Se. The extent of groundwater contamination to the southwest, however, has not been investigated. Locate additional streams, springs, and/or monitoring wells to evaluate the full extent of contamination to the southwest.
	RESPONSE Please refer to item 31 above. More data will be collected as a result of the installation of MMW15A and MMW16A, and as part of the tentative direct-push program.
33.	***AGENCY STATEMENT***

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	○ Cross sections C-C' and H-H' show that the MWD081 waste pile directly overlies Trd and could impact intermediate aquifers in the Trd. C-C' also indicates that potentially contaminated water from the BM Middle Pit (MMP040) may infiltrate into the Trd from the east. C-C' indicates that intermediate aquifers in the Trd at this location are probably bounded below and to the west by the less permeable Phosphoria Formation. The boundary conditions and the flow paths shown on C-C' suggest that intermediate aquifers in the Trd flow parallel to the axis of the syncline that underlies this portion of the mine towards the north or south. No monitoring locations are proposed for this intermediate aquifer. Determine the nature, extent, and fate of potentially contaminated water in the Trd by locating representative springs and/or installing groundwater monitoring wells in the Trd.
	RESPONSE Given the geology and location of this structural block it appears that any impact to the Trd in this area would be contained in the mine area. This would seem to be a low priority area for investigation. P4 will provide additional rationale and descriptive cross sections explaining why they do not feel this is a data gap that needs to be addressed.
34.	***AGENCY STATEMENT*** • On the north side of the mine, only one well, MMW017, is proposed to monitor the predicted northwesterly alluvial flow path. Given the known high Se concentrations associated with the BM, locate an additional shallow alluvial well near the northwest toe of MMD080.
	RESPONSE This is an additional location where the tentative direct-push program would help address the perceived data gap. It is expected that this area will be included in the program.
35.	***AGENCY STATEMENT*** **BM Deep (Wells Formation) data gaps** • The high Se concentrations in MMP039, MWD084, MWD082, MMP037, and/or MMP040, the presence of the east Ballard Pit and Rock Piles over the Wells Formation, and the extensive faulting (potential vertical flow conduits) beneath the potential sources on the east side as shown in C-C', suggest that regional groundwater southeast of the mine also may be contaminated. Locate one deep monitoring well southeast of the mine in the vicinity of MMW018.
	RESPONSE

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	The general structural grain and topography in the area of Ballard Mine would suggest general bedrock flow to the northwest. However, the complex structural geology of the Ballard Mine area may result in significantly different local conditions and hydrogeologically isolated blocks. An investigation of the intermediate and deep bedrock aquifers in the Ballard Mine area needs careful consideration given the potential expense of the wells and the possibility of drawing incorrect conclusions based on improperly placed data points. P4 understands the agencies' concerns. However, before further costly investigation of the regional Wells Formation aquifer is conducted, the CSM for this flowpath needs to be further developed. Data from the other areas were the bedrock aquifers are being investigated need to be considered to help focus the investigation, as well as with data that may be available in dissertations and theses. The expanded CSMs will need to be expanded to include estimates of potential loading, dispersion and attenuation, identification of discharge points and potential receptors, and travel times. This expanded CSM will be presented in a future Technical Memorandum.
36.	***AGENCY STATEMENT*** • As previously noted, open pit MMP036 appears to contain at least two unmonitored ponds. C-C' shows that only a thin veneer of unmined Ppm underlies these ponds and separates them from PPw below. C-C' also shows several vertical faults directly intersect this pit, indicating that potential vertical flow conduits are present at this location. Locate one deep monitoring well into the PPw at this pit to evaluate its impact on deep groundwater.
	RESPONSE Please refer to the response to Item 35.
37.	***AGENCY STATEMENT*** • Cross section I-I' indicates mine waste pile MMD080 overlies Qw which overlies PPw. Infiltration from this waste pile may be impacting deeper regional aquifers in the PPw. Given the predicted regional northwesterly groundwater flow direction for aquifers in the PPw, deep wells to the south (MMW006, MMW020, and MMW021) will probably be upgradient of this potential source. Locate one deep well downgradient of MMD080 in the vicinity of MMW017.
	RESPONSE Please refer to the response to Item 35. In addition, this location should only be considered after the impact to the Qw is understood.